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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/617,709	07/14/2003	Andrew Pullan	3652-42	4187

23117 7590 12/28/2006  
NIXON & VANDERHYE, PC  
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ARLINGTON, VA 22203

EXAMINER
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AKHAVANNIK, HADI

ART UNIT	PAPER NUMBER
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2624

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/28/2006	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/617,709	<b>Applicant(s)</b> PULLAN ET AL.	
	<b>Examiner</b> Hadi Akhavannik	<b>Art Unit</b> 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,7-9 and 14 is/are rejected.
- 7) ☒ Claim(s) 3-6 and 10-13 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☒ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>1/9/04</u> . | 6) <input type="checkbox"/> Other: ____  |

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1, 7-8, 14 rejected under 35 U.S.C. 102(b) as being anticipated by Subramanyan et al. (6782284, referred to as "Subramanyan" herein).

Regarding claim 1, Subramanyan discloses a method of defining a model of one or more organs or part(s) thereof from multiple images of the organ(s) or part(s) thereof, the method comprising the steps of: generating a computational mesh of one or more organs or part(s) thereof from multiple images of the organ(s), or part(s) thereof (see the abstract, figure 1 item 32, column 3 lines 38-58 discloses a CT volume image memory reconstruction technique and a three dimensional image reconstruction process);

generating a representation of musculature or part(s) thereof associated with the organ(s) (see figures 9-11 as they disclose representations of many organs and muscle groups. In particular figure 11 includes pictures of many organs which inherently include the soft muscle tissue);

calculating electric and/or magnetic fields associated with the muscle layers (column 3 lines 30-37 discloses that xray machines converting xray signals into electrical signals. These electrical signals are associated with the muscle layers because the xray is used to image the muscle layers and organs);

and defining a model based on the computational mesh, and the electric and/or magnetic fields (see the computational mesh argument above and also column 8 lines 15-63, as they disclose including new computed features into the computer mesh so as to provide a better interface for a user).

Regarding claim 7, Subramanyan discloses obtaining one or more measured sources of magnetic and/or electric fields from a subject; and estimating the location of one or more sources of magnetic and/or electric fields based at least partly on the model of one or more organs and the measured sources of magnetic and/or electric fields (the rejection of claim 1 discloses the ability to use MRI machines and the examiner notes that an MRI machine determines the magnetic fields of organs in order to estimate their location in a body).

Regarding claim 8, please see the rejection of claim 1 above as it discloses all components of claim 8.

Regarding claim 14, please see the rejection of claim 7 above as it discloses all aspects of claim 14.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 2, 9 rejected under 35 U.S.C. 103(a) as being unpatentable over Subramanyan in view of Richards et al. (5771894, referred to as "Richards" herein).

Subramanyan discloses all aspects of claim 2, except he does not disclose obtaining non-invasive measurements of electrical and/or magnetic activity from a subject.

Richards discloses obtaining non-invasive measurements of electrical and/or magnetic activity from a subject (Richards discloses a SQUID magnetometer that measure magnetic activity of the body, see the title, abstract, figure 1, and column 2 line 25 to column 3 line 10).

It would have been obvious at the time of the invention to one of ordinary skill in the art to include in Subramanyan a non-invasive measurement means as taught by Richards. The reason for the combination is because it makes for a more robust system that is able to incorporate measurement data into an image. Please note that Subramanyan already discloses the ability to incorporate measurement data of a stent into an image, please see the abstract and column 8 lines 53-63. The stent produced information is incorporated into the image. The functions to define the model based on measured activity.

Regarding claim 9, please see the rejection of claim 2 as it discloses all aspects of claim 9.

***Allowable Subject Matter***

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Claims 3-6 and 10-13 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The allowable subject matter is defining the model based at least partly on differences between the estimated sources and the measured activity.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Vaillant et al. (6549606, discloses imaging a the heart); Cline et al. (6249693, discloses imaging chambers of the heart which includes musculature and the organ); Fry et al. (4539640, discloses reconstructing impedance imaging).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hadi Akhavannik whose telephone number is 571-272-8622. The examiner can normally be reached on 10:30-7:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Mancuso can be reached on (571)272-7695. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HA  
12/12/06



JOSEPH MANCUSO  
SUPERVISORY PATENT EXAMINER